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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/817,669

03/26/2001

George J. Hudak

10003916-1

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02/26/2004

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EXAMINER

MACCHIAROLO, PETER J

ART UNIT

PAPER NUMBER

2875

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/817,669	HUDAK, GEORGE J.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Peter J Macchiarolo	2875	AW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/15/2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4,23,24,27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4,23,24,27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The reply filed on August 27, 2003 consists of changes to the claims, and further, the reply consists of remarks related to the prior rejection of claims in the previous Office Action. The above have been entered and considered. However, pending claims 4, 23, 24, 27, and 28 are not allowable as explained below.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 4, 23, 24, 27, and 28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto (USPN 4,933,650; "Okamoto") in view of Srivastava et al (USPN 6,057,645; "Srivastava").**

3. In regards to claims 4, 27, and 28, Okamoto discloses in figure 5, a discharge tube (80) in which gas (501) is carried for conversion to a plasma (701) therein, an enclosed passageway (53) surrounding the discharge tube thorough which cooling air (502) moves, such contained cooling air coming in contact with the outer surface of the discharge tube before the outlet (72) of the discharge tube; and apparatus (50) encircling the discharge tube and the enclosed passageway and located before the outlet of the discharge tube, such apparatus subjecting the discharge tube and enclosed passageway to sufficient amounts of radio frequency or microwave energy to

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generate plasma in the discharge tube from the gas, such radio frequency or microwave energy not effecting the cooling air. Okamoto further shows the apparatus (50) encircling the discharge tube and the enclosed passageway subjects the discharge tube and enclosed passageway to sufficient amounts of microwave energy to generate plasma in the discharge tube from the gas, such microwave energy not effecting the cooling air. Okamoto further shows microwave energy is introduced into a cavity defined by an inner wall (51), two side walls (50) and an outer wall (70), and wherein the inner wall surrounds at least a portion of the gas discharge tube.

4. Okamoto is silent to the discharge tube being made of sapphire, but that it is made from quartz or the like<sup>1</sup>.

5. However, Srivastava teaches that quartz and sapphire are equivalent materials known in the plasma discharge tube art<sup>2</sup>. Further, one would be motivated to substitute sapphire for quartz in Okamoto's plasma discharge tube for a variety of reasons, including material availability, and operation methods requiring sensitive parameters.

6. Therefore, because these two materials were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute sapphire for quartz in Okamoto's plasma discharge tube.

7. In regards to claims 23 and 24, Okamoto and Srivastava teach all of the recited limitations of claim 27 (above).

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<sup>1</sup> Okamoto col. 2, ll. 52-53.

<sup>2</sup> Srivastava col. 2, ll. 31-33.

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8. Okamoto discloses that the diameter of the discharge tube is about 4mm, i.e. that the discharge tube has a diameter on the order of 1 mm<sup>3</sup>.

9. Although Okamoto is silent to the exact length of the discharge tube, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Furthermore, one would be motivated to construct Okamoto's tube shorter than 10 mm in length for a variety of reasons, including material availability, and operation methods requiring sensitive parameters.

10. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct Okamoto's plasma discharge tube no more than 10 mm in length.

### ***Response to Arguments***

11. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

13. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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<sup>3</sup> Okamoto col. 5, ll. 47-49.

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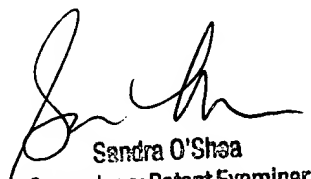
MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Macchiarolo whose telephone number is (571) 272-2375. The examiner can normally be reached on 7.30 - 4:30, M-F.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

16. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

pjm



Sandra O'Shea  
Supervisory Patent Examiner  
Technology Center 2800